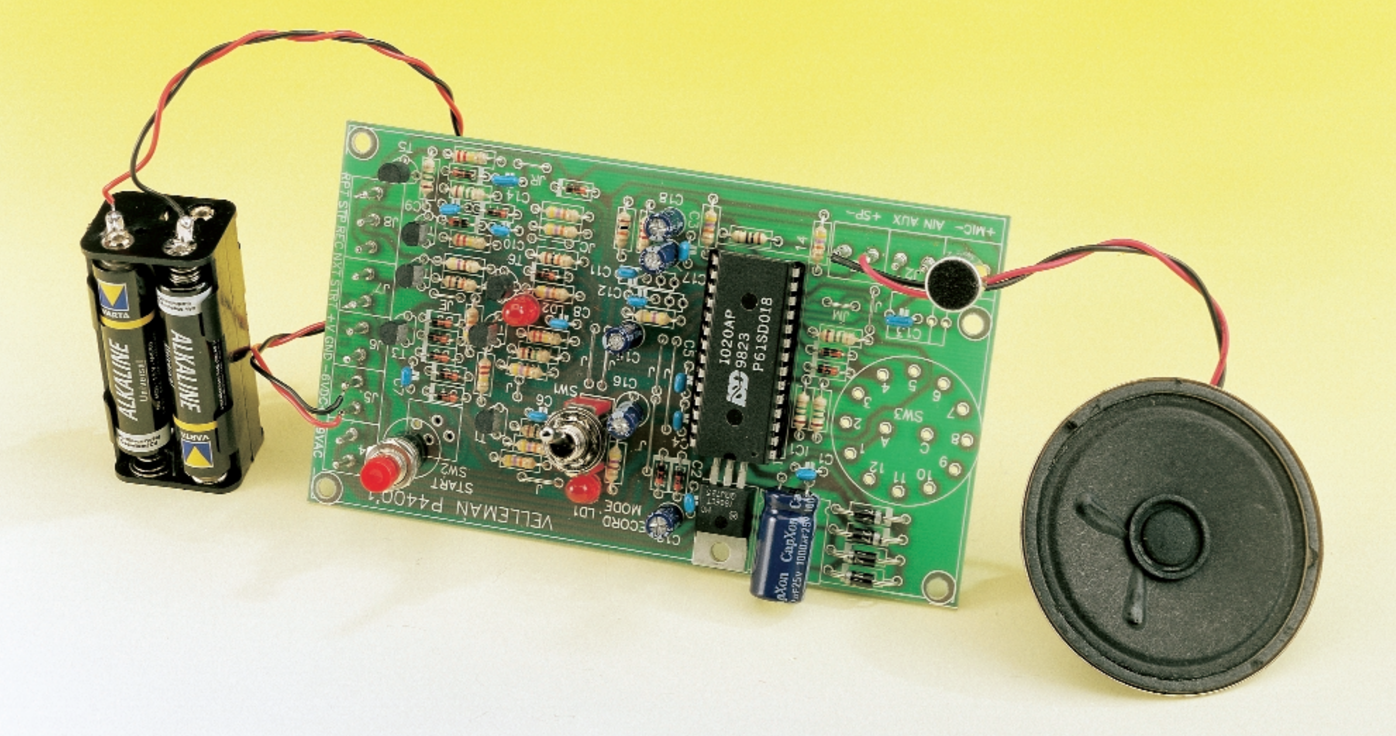
Record/Playback Module

A solid-state recorder

This device is an outstanding choice for a talking doorbell or any other application in which a short text of your own choice must be repeated. The length of the message is naturally limited, but it can be increased by coupling several modules in series.



This type of record/playback unit always has a special kind of fascination. After all, it's not that long ago that the recording and playback of speech or music without the aid of moving parts was only possible in science fiction stories. However, in the past few years these 'solid-state' recorders have become familiar objects. Since there are innumerable possible applications for such a device, both commercially and in the household, Velleman have include one in their catalogue of construction kits, and at a reasonable price. In order to give our readers an idea of the features of this record/playback module, we assembled one in the Elektor labs.

Only one IC

For several years now, the firm ISD has been marketing a series of ICs that contain a complete solid-state recorder. This consists of the ISDD10XX, ISD14XX and ISD25XX series of components. The last two digits of the part number indicate the number of seconds' worth of information that can be stored in the IC. The IC used in the Velleman kit is a rather old version, the ISD1020, with a storage time of 20 seconds.

All of these voice recorder ICs have non-volatile analogue memories that can hold the stored audio for at least ten years without power. In addition, the chip includes a microphone preamplifier and an out-

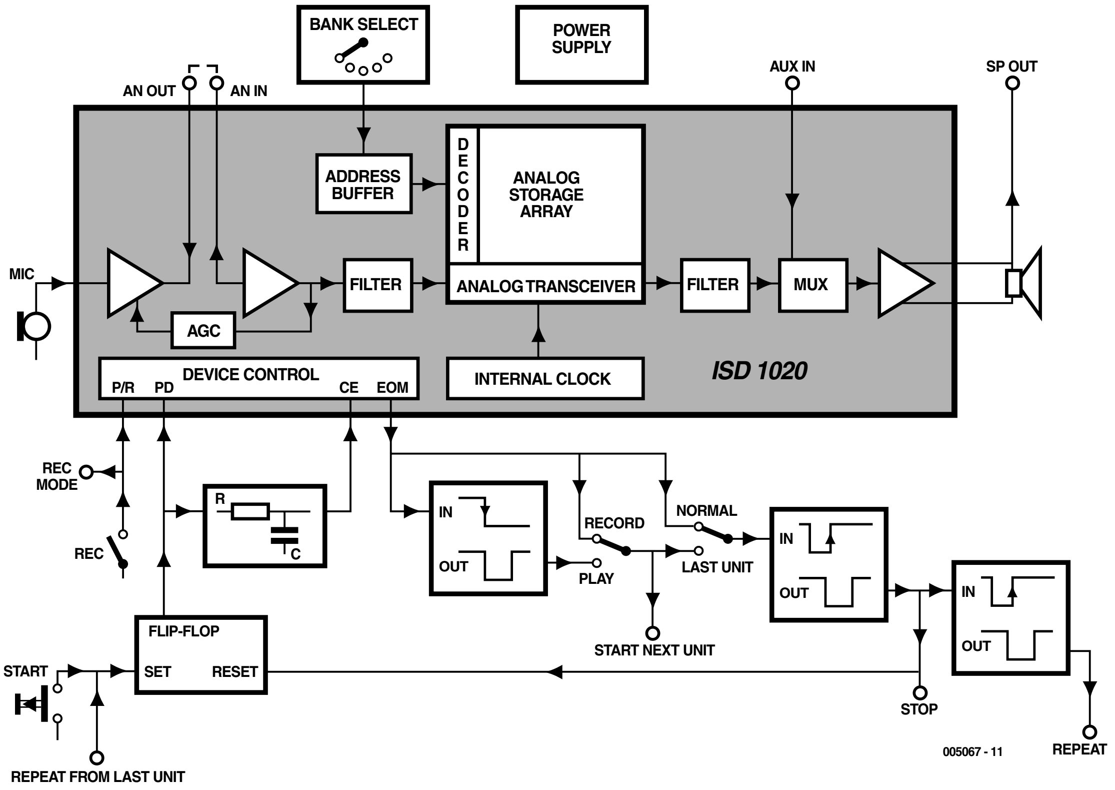


Figure 1. Block diagram of the record/playback module built around the ISC1020 IC.

put amplifier, so a microphone and a (small) loudspeaker can be connected directly to the IC. The external components are thus limited to a few resistors and capacitors, plus two switches.

In the Velleman kit you will also find a number of transistors, since a few extra functions have been added. These allow several modules to be connected in cascade, allow the message to automatically be repeated periodically, and allow five different sections of the recording to be selected ('bank selection'). The block diagram in **Figure 1** shows how the device can be set up for the various types of playback.

The circuit can be powered from batteries (6 V) or from a standard mains adapter (9 - 12 V_{AC}). The current consumption is only a few tens of milliamps. In the standby mode, the current consumption is negligible.

Construction and operation

The kit includes an extensive set of instructions for putting it together, which makes assembling the circuit child's play. The printed circuit board is clearly laid out and fortunately not all too small, so even the less experienced solder artist should not have any problems with it. An electret microphone is supplied with the kit, but remarkably enough there is no loudspeaker, so you will have to supply your own. Fortunately, these miniature Japanese loudspeakers are available for next to nothing.

Once we put together the circuit and connected the power source, it started to work right away. This is of course the way things should be, but experience teaches that it is not always the case.

Using the record/playback module is simplicity itself.

Recording:

- Set the record/playback switch to the 'record' position.
- Press and hold the Start button, and speak your message into the microphone. A LED shows when the maximum recording time is reached.

Playback:

- Set the switch to the 'playback' position.
- Briefly press the Start button. The recorded message is played back. The playback stops automatically at the end of the message.

It's thus just as easy to use the circuit as it is to build it. If you are looking for a way to give your doorbell or some toy an original and 'expressive' character, this is exactly what you need.

You shouldn't expect too much in terms of sound quality, which is around the level of that of a telephone. However, this is easily adequate for most applications.

(005067-1)

Text (Dutch original): S. van Rooij

A complete construction kit for the Record/Playback module can be obtained from Velleman, Belgium. The kit, part number K4400, is priced at US$59.95 and available from electronics retail shops). In the UK, a selection of Velleman kits is stocked by Maplin.

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